June 19, 2019

Marlene H. Dortch *via ECFS*
Secretary
Federal Communications Commission
445 12th St S.W., Room TW-A325
Washington, DC 20554

**RE: Written Ex Parte Presentation: GN Docket No. 18-122: *In the Matter of* Expanding Flexible Use of the 3.7 to 4.2 GHz Band**

Dear Ms. Dortch:

The Air Line Pilots Association ("ALPA"), Aircraft Owners and Pilots Association ("AOPA"), Airlines 4 America ("A4A"), Aeronautical Frequency Committee ("AFC"), Aerospace Industries Association ("AIA"), General Aviation Manufacturers Association ("GAMA"), Helicopter Association International ("HAI"), International Air Transport Association ("IATA"), National Air Transport Association ("NATA"), and National Business Aviation Association ("NBAA"), collectively referred to herein as the "Aviation Associations," provide the following views to the Commission on the above-referenced proceeding. This includes an update on how activities and views of the aviation industry have developed since the *ex parte* meeting with staff of several FCC Bureaus in December 2018.[1] At that meeting, the aviation industry expressed concerns about potential harmful interference from new commercial wireless applications in the 3.7-4.2 GHz band to aviation safety systems operating in the adjacent 4.2-4.4 GHz band.

**Background**

The 4.2-4.4 GHz band is allocated domestically and internationally for both the Aeronautical Radionavigation and Aeronautical Mobile Route Services ("ARNS" and "AM(R)S", respectively), enabling both radio altimeter and Wireless Avionics Intra-Communications ("WAIC") systems to operate within countries and across international borders.[2] As previously explained, these two aviation systems are essential to safety of flight and may experience harmful interference by changes to the adjacent 3.7-4.2 GHz band.[3] Therefore adequate measures to assess spectrum compatibility and protections must be put in place to maintain integrity of the US national airspace from unintended regulatory changes.

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1 *See* Letter from Max Fenkell, Manager, Unmanned and Emerging Aviation Technologies, Aerospace Industries Association, to Marlene H. Dortch, Secretary, Federal Communications Commission, filed in GN Docket No. 18-122 (December 17, 2018) ("Aviation *Ex Parte* Letter")

2 *See* 47 C.F.R. § 2.106.

3 *See Aviation Ex Parte Letter.*

The Federal Aviation Administration ("FAA") mandates the equipage of radio altimeters on all commercial airline and business aircraft, as well as most helicopters. Additionally, these avionics are voluntarily installed on tens of thousands of general aviation aircraft, while also being considered for Unmanned Air Systems ("UAS") and smaller drones. Radio altimeters are a critical sensor required to automatically control aircraft landings and terrain detection/avoidance systems. Without radio altimeters as operated today, modern air travel and its excellent safety record would not be possible.

WAIC systems are being finalized by international aviation standards bodies and will soon be implemented on newer aircraft once national certification has been granted.[4] The WAIC system will allow wireless communications for safety-critical messages, and function as an additional redundancy should there be a cable failure. These features will result in greater safety and efficiency for the next generation of aircraft and benefits for the flying public.

**Current aviation industry activities**

Since the December 2018 meeting with the Bureaus' staffs, the aviation industry has remained engaged with other relevant Federal agencies and interested industry groups, such as the C-band Alliance ("CBA"). This has included reviewing the relevant proposals, with a focus on emissions and operational deployments of potential 5G systems in the 3.7-4.2 GHz band.

Concurrently, the commercial aviation industry continues the avionics testing described in the December *Aviation Ex Parte Letter* to better evaluate the impact of unwanted emissions into radio altimeters. This work is being coordinated with a range of domestic and international aerospace corporations who design and manufacture radio altimeters systems.[5] As radio altimeters provide essential safety of flight information during the most critical phases of flight, it is vital that the testing accurately reflect any potential impact the aircraft will experience during take-off and landing, or when conducting extended low altitude operations, as are common with helicopters. This has added complexity to the assessment with the various proposed 5G and other new entrant services, and it is anticipated that the results from this effort will be shared with the Commission in the coming months as the work develops.

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[4] Implementation of WAIC depends upon access to the only frequencies set aside for it, the AM(R)S spectrum at 4.2-4.4 GHz following a 2015 World Radiocommunication Conference decision designating the band for WAIC.

[5] The radio altimeter testing is being organized by the Aerospace Vehicle Systems Institute ("AVSI"), an aerospace research cooperative including members from Airbus, Boeing, Collins Aerospace, the FAA, Honeywell, and Thales. *See* www.AVSI.aero

**Aviation industry views**

As a result of internal discussions and engagements with interested parties, the Aviation Associations recommend the Commission consider the following principles while making decisions for the 3.7-4.2 GHz band:

1. Any introduction of new entrants into the 3.7-4.2 GHz band must occur only after the Commission fully addresses how to adequately protect the safety critical aviation equipment operating in the adjacent 4.2-4.4 GHz band.[6] The Aviation Associations note that it is not only the aviation industry recommending such action. For example, T-Mobile, which is a leading proponent for commercial mobile's access to the 3.7-4.2 GHz band, supports the need to first ensure protection to the adjacent band operations before changes are implemented in the 3.7-4.2 GHz band.[7] There is a clear public safety benefit to incorporating the necessary protections in any final ruling, as ignoring these would create potentially unforeseen and disastrous implications for both aviation and new 5G and other mobile operators.

2. The assessment of aviation systems and affected operations by the Commission must be in conjunction with the FAA. The independent expertise and input from the FAA would fully inform a comprehensive assessment of all aviation operations, including low altitude operators such as helicopters and drones. Therefore, the Commission must ensure the FAA is formally consulted before any formal action is taken.

3. The Commission should also ensure that the incumbent users of the 3.7-4.2 GHz band can continue to operate without a detrimental impact to future SATCOM services. This is vital to allow satellite operators to continue to provide critical services to those who rely on such earth station operations, including the aviation industry among many others. In the Aviation Associations' view, several proposals allowing a full SATCOM capability to continue nationwide in the upper part of the 3.7-4.2 GHz band deserve serious consideration as the best approach forward, and the Aviation Associations continue to study these approaches. However, what may be adequate to protect operations immediately above 4.2 GHz may not necessarily be sufficient to also protect incumbent use of the band, and this must be further explored.

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[6] It may be that a suitably sized guard band in the upper part of the 3.7-4.2 GHz band consisting of incumbent-only C-Band satellite operations will provide adequate protection, but this first needs to be verified through testing. Other mitigation measures may also be required.

[7] *See, e.g.,* T-Mobile Reply Comments, GN Docket No. 18-122, at 42 (dated December 11, 2018) ("The Commission should work with other federal agencies to determine an appropriate technical framework to allow mobile use at 3.7-4.2 GHz without causing harmful interference to properly engineered adjacent aviation operations"). T-Mobile emphasized that the Commission should "adequately address any interference concerns related to [4.2-4.4 GHz aviation] services before mobile wireless services are deployed" in the 3.7-4.2 GHz Band. *Id.* at 43.

**Summary**

While the Aviation Associations support new wireless technologies that lead to innovation, such progress cannot come at the cost of national aviation safety. Therefore, any final plan for C-band must be fully assessed by the FAA and incorporate the necessary protections for aircraft and other airspace users. Proposals lacking such consideration would have a significant potential to affect aviation safety and will almost certainly eventually lead to one or more air safety incidents.

While the AVSI avionics testing is ongoing, the Aviation Associations are unable to endorse any single proposal until it is clear changes to the 3.7-4.2 GHz band do not affect aviation flight safety. The aviation industry remains ready and willing to work with the Commission and other interested parties to address these challenges and ensure the use of the 3.7-4.2 GHz band is a success for all.

Pursuant to Section 1.1206 of the Commission's Rules, this letter is being filed electronically.

Please direct any questions concerning this submission to the undersigned.

Respectfully Submitted,

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